

Technical Bulletin #52:

CHILI PEPPER

Introduction

Chili pepper is a popular vegetable valued around the world for the color, flavor, spice, and nutritional value it contributes to many meals. Chili varieties display a wide range of plant and fruit traits, and production practices vary greatly from region to region and may be needed to adapt to local conditions such as soil type, weather, pests and diseases.

Growing conditions

Chili pepper grows best in a loam or silt loam soil with enough organic matter and has a good water holding capacity. Chilies can also grow on different soil types but they have to be well drained and soil pH should be between 5.5 - 7.0. Chili pepper is well adapted to hot weather, but it does not set fruit well when night temperatures are higher than 24°C. In general chili pepper grows well in a temperature range of 20-30°C. Yields of chili pepper will be decreased if the temperature falls below 15°C or exceeds 32°C for extended periods.

Soil Preparation

Plow the soil as deep as possible, (20-30 cm deep is recommend). If soil is still too coarse you can plow again or use a harrow if available until soil is loose enough. Remove plant residues from previous crops and avoid planting chili pepper on plots that have been planted with crops from the same family like tomatoes and eggplants because these crops can share many pests and diseases with chili peppers. We recommend raising beds because this practice improves the aeration of the roots and minimize losses due to root diseases and flooding. Raise beds 30 cm high and space them at 1.5 m wide (furrow to furrow) and cover with a mulch (plastic or rice straw) over the beds to reduce weed emergence, and to keep good soil moisture content.

Seedling production

Good seed will provide higher yields, and chilies perform better when we transplant seedlings which lead to stronger plants and more uniformity.

For more detail how to produce good quality seedlings please refer to HARVEST Technical Bulletin # 50 "Seedling Production in Trays".

Transplanting

Seedlings can be transplanted when 18-25 days old, seedlings should be strong and healthy, have a firm stem and free of pest and diseases. Usually we transplant when the seedlings have two to four true leaves. Apply starter solution in soil hole then place the seedling in the hole, keep the cotyledons above the soil surface and press soil firmly around the root, irrigate the plants as soon as possible after transplanting. When using plastic mulch be sure to place the seedling in the middle of the hole because if the borders of the plastic touch the seedling it can burn it and in many cases the plant will die. Also, try to avoid spaces between the plastic mulch and the soil because in those spaces the temperature is extremely high and can kill the plant just transplanted.

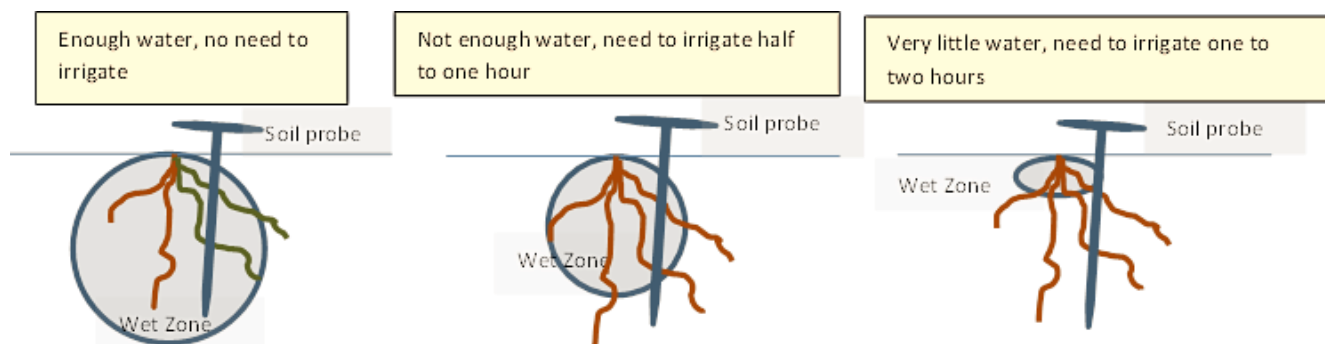
There are many different types of chilies, therefore the planting distance will depend on the size of the plant. There are not big differences between planting a single row or two rows per beds, in any case you have to consider that the amount of plants in 100 linear meters (1.50 m between beds) should be between 400 to 500 plants (20 to 25 cm in single row and 40 to 50 cm in double row).



Irrigation

Chili peppers are sensitive to waterlogging and flooding as they have a relatively shallow root system. If flooding occurs, fields should be drained within 1–3 days or plants will begin dying. Too little water, especially during the flowering stage, will severely reduce the yields. Chili peppers grow best in moist, but not soggy, soil. A drip irrigation system is the best method to irrigate chili pepper; therefore our recommendations are based only on this type of system. The root zone of young transplants is shallow so irrigation should be frequent and just enough to recharge the root zone. Soil moisture content is the key indicator to evaluate crop water needs at each irrigation application. Chili pepper will generally wilt and die if they stand in water for more than 48 hours.

In this graph we can see a good way to determine how many hours we have to irrigate in a daily basis.



Fertilization program

In the target yield of 21 t/ha the recommended fertilizer should be applied at rate of 350 kg of Urea, 250kg of DAP and 450 of KCl per ha. Fertilizer should be applied on a weekly basis and the amount of fertilizer used at each application will vary depending on the growing stage of the plant. For more details you can ask your HARVEST technician to provide you with a fertilization program made according to your own conditions.

Pest and Diseases

Common insects that usually effect chili peppers during all growing stages are whiteflies, aphids, red spider mites, and thrips which can transmit serious viral diseases. Other common pests are caterpillars, fruit borers and weevils. If you identify a pest damaging your crop ask your HARVEST technician to check it and together decide what action to take.

In term of diseases, there are many fungal, bacterial, and viral problems. For fungal diseases we have some fungicides that can help us to cure or prevent the disease but for bacterial and viral problems there are not any chemicals recommended for use. Therefore the only option is the cultural practice of using resistant plant varieties.

Common fungal diseases of chili pepper are Anthracnose, Fusarium, Cercospora leaf spot and Downy Mildew. These fungi generally attack the aerial part of the plant (leaves, stems and fruits) and they can be controlled by several fungicides and cultural practices such as removal of all leaves and branches showing infection symptoms. This will promote vigorous plant growth and reduce the spread of these foliar diseases. Phytophthora blight is also an important fungal disease and depending on the stage of the plant, it can attack the roots (most common), stem, leaves and fruits.

Bacterial spot, and bacterial wilt are bacterial diseases. In Cambodia the use of antibiotics in plants is not authorized by the Government, therefore the only option is the use of resistant varieties and cultural practices.

Harvest

Chili peppers can be harvested as green fruit or mature fruit depending on the market demand. Hot climates can promote chili fruit ripening faster than cooler climates. If climatic conditions are good (cool and dry), chili peppers can be harvested for several months (up to six), harvesting once or twice per week. Fresh chili fruits should not be washed and should be stored in a cool (28°C and air moisture about 60%) shaded, dry place until they are sold. Fruits will last unspoiled for 1–2 weeks. For dry chili, it's important to preserve the red color of the mature fruits. After harvest, drying them in direct sunlight is a common practice. Cloudy weather increases the drying time and the risk of postharvest spoilage.

Cambodia HARVEST

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